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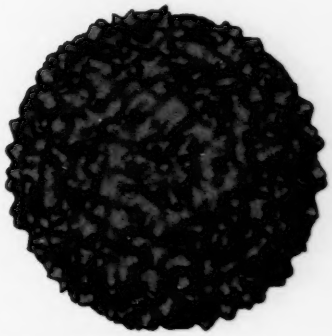

ON THE COVER
Image shows a surface-shaded cryo-electron microscopy image of a West Nile virus particle (kindly provided by Richard J. Kuhn, Purdue University, West Lafayette, IN). Individuals homozygous for a deletion mutation in the gene that encodes the chemokine receptor CCR5 (CCR5Δ32) are more susceptible to symptomatic WNV infection. Related article by Glass et al.
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CORRECTION
The words on the cover of the December 19th, 2005 issue "Carbon Monoxide Eases Irritable Bowel Syndrome" should have read "Carbon Monoxide Eases Inflammatory Bowel Disease". We apologize for any confusion caused.

ARTICLES

53 **An essential role for complement C5a in the pathogenesis of septic cardiac dysfunction**
Andreas D. Niederbichler, Laszlo M. Hoesel, Margaret V. Westfall, Hongwei Gao, Kyros R. Ipaktchi, Lei Sun, Firas S. Zetoune, Grace L. Su, Saman Arbabi, J. Vidya Sarma, Stewart C. Wang, Mark R. Hemmila, and Peter A. Ward
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63 **Regulation of the germinal center gene program by interferon (IFN) regulatory factor 8/IFN consensus sequence-binding protein**
Chang Hoon Lee, Mark Melchers, Hongsheng Wang, Ted A. Torrey, Rebecca Slota, Chen-Feng Qi, Ji Young Kim, Patricia Lugar, Hee Jeong Kong, Lila Farrington, Boris van der Zouwen, Jeff X. Zhou, Vassilios Lougaris, Peter E. Lipsky, Amrie C. Grammer, and Herbert C. Morse III

73 **Purified hematopoietic stem cell engraftment of rare niches corrects severe lymphoid deficiencies without host conditioning**
Deepta Bhattacharya, Derrick J. Rossi, David Bryder, and Irving L. Weissman

87 **G-CSF/SCF reduces inducible arrhythmias in the infarcted heart potentially via increased connexin43 expression and arteriogenesis**
Michael T. Kuhlmann, Paulus Kirchhof, Rainer Klocke, Lekbira Hasib, Jörg Stypmann, Larissa Fabritz, Matthias Stelljes, Wen Tian, Melanie Zwiener, Marcus Mueller, Joachim Kienast, Günter Breithardt, and Sigrid Nikol
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99 **Disparate roles of ATR and ATM in immunoglobulin class switch recombination and somatic hypermutation**
Qiang Pan-Hammarström, Aleksi Lähdesmäki, Yaofeng Zhao, Likun Du, Zhihui Zhao, Sicheng Wen, Victor L. Ruiz-Perez, Deborah K. Dunn-Walters, Judith A. Goodship, and Lennart Hammarström

111 **Antiidiotypic DNA vaccination induces serum bactericidal activity and protection against group B meningococci**
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119 **LAT-mediated signaling in $CD4^+CD25^+$ regulatory T cell development**
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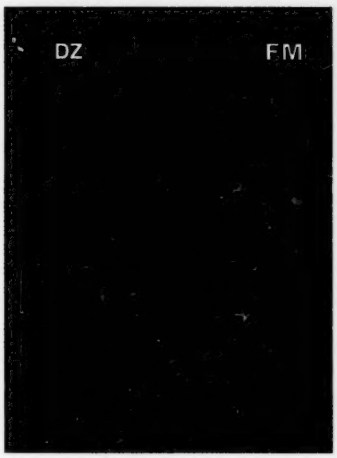
131 **MAP kinase phosphatase 1 controls innate immune responses and suppresses endotoxic shock**
Qun Zhao, Xianxi Wang, Leif D. Nelin, Yongxue Yao, Ranyia Matta, Mary E. Manson, Reshma S. Baliga, Xiaomei Meng, Charles V. Smith, John A. Bauer, Cheong-Hee Chang, and Yusen Liu



The transcription factor interferon regulatory factor 8 (green) is highly expressed in germinal center centroblasts and drives the expression of activation-induced cytidine deaminase and Bcl6.
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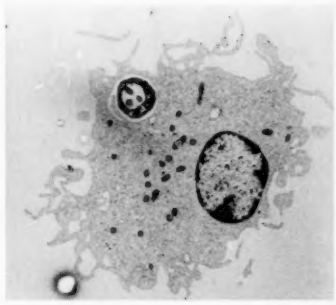

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165 **Cytokine signal transduction is suppressed in preselection double-positive thymocytes and restored by positive selection**
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177 **Uptake of *Leishmania major* by dendritic cells is mediated by Fcγ receptors and facilitates acquisition of protective immunity**
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203 **Nod1 acts as an intracellular receptor to stimulate chemokine production and neutrophil recruitment in vivo**
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215 **AID-dependent histone acetylation is detected in immunoglobulin S regions**
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227 **Activation of the Flt3 signal transduction cascade rescues and enhances type I interferon–producing and dendritic cell development**
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239 **TRAIL-expressing T cells induce apoptosis of vascular smooth muscle cells in the atherosclerotic plaque**
Kayoko Sato, Alexander Niessner, Stephen L. Kopecky, Robert L. Frye, Jörg J. Goronzy, and Cornelia M. Weyand
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251 **Correction**

253 **Correction**

Engraftment of donor Langerhans cells after hematopoietic stem cell transplant is more rapid when the recipient receives full intensity transplants. Image shows Langerhans cells from a male transplant recipient who received bone marrow from a female donor (X chromosome [red]; Y chromosome [green]).
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289 Killer cell lectin-like receptor G1 binds three members of the classical cadherin family to inhibit NK cell cytotoxicity
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297 ATM regulates ATR chromatin loading in response to DNA double-strand breaks
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305 T-independent type II immune responses generate memory B cells
Tetyana V. Obukhanych and Michel C. Nussenzweig

ON THE COVER
Artwork (cut Coloraid paper on paper) by New York artist Rachel Urkowitz (email: rachelurk@earthlink.net). Image shows the interaction between the NK cell inhibitory receptor KLRG1 and its newly identified ligand, E-cadherin, on target cells. Related article by Ito et al.
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311 **Inactivation of the PRDM1/BLIMP1 gene in diffuse large B cell lymphoma**
Laura Pasqualucci, Mara Compagno, Jane Houldsworth, Stefano Monti, Adina Grunn, Subhadra V. Nandula, Jon C. Aster, Vundavally V. Murty, Margaret A. Shipp, and Riccardo Dalla-Favera

319 **Strand-biased defect in C/G transversions in hypermutating immunoglobulin genes in Rev1-deficient mice**
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Tetsuya Honda, Eri Segi-Nishida, Yoshiki Miyachi, and Shuh Narumiya

337 **The Bcl10–Malt1 complex segregates FcεRI-mediated nuclear factor κB activation and cytokine production from mast cell degranulation**
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349 **B cell–deficient NOD.H-2h4 mice have $CD4^+CD25^+$ T regulatory cells that inhibit the development of spontaneous autoimmune thyroiditis**
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359 **The immune paradox of sarcoidosis and regulatory T cells**
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371 **Block of C/EBPα function by phosphorylation in acute myeloid leukemia with FLT3 activating mutations**
Hanna S. Radomska, Daniela S. Bassères, Rui Zheng, Pu Zhang, Tajhal Dayaram, Yukiya Yamamoto, David W. Sternberg, Nathalie Lokker, Neill A. Giese, Stefan K. Bohlander, Susanne Schnittger, Marie-Hélène Delmotte, Roger J. Davis, Donald Small, Wolfgang Hiddemann, D. Gary Gilliland, and Daniel G. Tenen

383 **H2-M3–restricted $CD8^+$ T cells are not required for MHC class Ib–restricted immunity against *Listeria monocytogenes***
Sarah E.F. D'Orazio, Christine A. Shaw, and Michael N. Starnbach

T cells lacking the calcium-binding protein calreticulin are hyperresponsive due to increased cytosolic calcium levels and an accumulation of the transcription factor NFAT in the nucleus.
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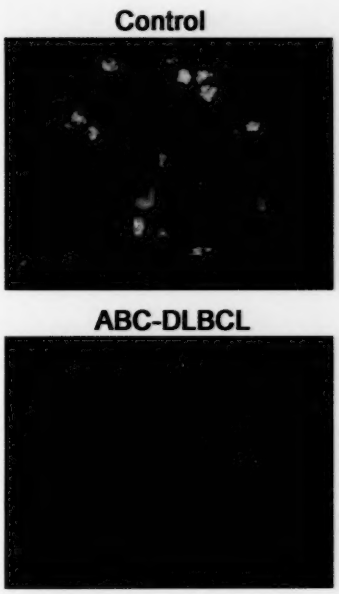

The B cell protein BLIMP1 (yellow) is absent in many activated B cell–like diffuse large cell lymphomas (ABC-DLBCL).
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393 **A checkpoint for autoreactivity in human IgM^+ memory B cell development**
Makoto Tsuiji, Sergey Yurasov, Klara Velinzon, Saskia Thomas, Michel C. Nussenzweig, and Hedda Wardemann

401 **Isoprenoids determine Th1/Th2 fate in pathogenic T cells, providing a mechanism of modulation of autoimmunity by atorvastatin**
Shannon E. Dunn, Sawsan Youssef, Matthew J. Goldstein, Thomas Prod'homme, Martin S. Weber, Scott S. Zamvil, and Lawrence Steinman
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413 **Yellow fever vaccine YF-17D activates multiple dendritic cell subsets via TLR2, 7, 8, and 9 to stimulate polyvalent immunity**
Troy Querec, Soumaya Bennouna, Sefik Alkan, Yasmina Laouar, Keith Gorden, Richard Flavell, Shizuo Akira, Rafi Ahmed, and Bali Pulendran

425 **Proteinase-activated receptor 2 modulates neuroinflammation in experimental autoimmune encephalomyelitis and multiple sclerosis**
Farshid Noorbakhsh, Shigeki Tsutsui, Nathalie Vergnolle, Leonie A. Boven, Neda Shariat, Mohammed Vodjgani, Kenneth G. Warren, Patricia Andrade-Gordon, Morley D. Hollenberg, and Christopher Power
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437 **Complete differentiation of $CD8^+$ T cells activated locally within the transplanted liver**
Ingo Klein and Ian Nicholas Crispe

449 **Impaired response to *Listeria* in H2-M3–deficient mice reveals a nonredundant role of MHC class Ib–specific T cells in host defense**
Honglin Xu, Taehoon Chun, Hak-Jong Choi, Bin Wang, and Chyung-Ru Wang

461 **Regulation of peripheral T cell activation by calreticulin**
Simona Porcellini, Elisabetta Traggiai, Ursula Schenk, Denise Ferrera, Michela Matteoli, Antonio Lanzavecchia, Marek Michalak, and Fabio Grassi

473 **Correction**

475 **Correction**

477 **Correction**

479 **Correction**

481 **Correction**

Antibodies from a patient with rheumatoid arthritis cause joint inflammation (shown) when transferred into mice lacking the inhibitory receptor FcγRIIB.
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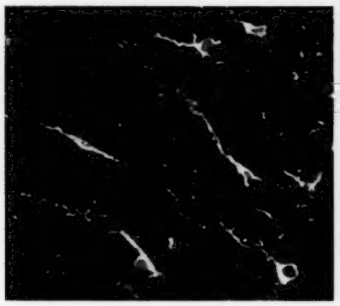

Proteinase-activated receptor-2 (yellow) is upregulated on astrocytes in mice with experimental autoimmune encephalomyelitis.
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513 Targeting coagulation factor XII provides protection from pathological thrombosis in cerebral ischemia without interfering with hemostasis
Christoph Kleinschnitz, Guido Stoll, Martin Bendszus, Kai Schuh, Hans-Ulrich Pauer, Peter Burfeind, Christoph Renné, David Gailani, Bernhard Nieswandt, and Thomas Renné
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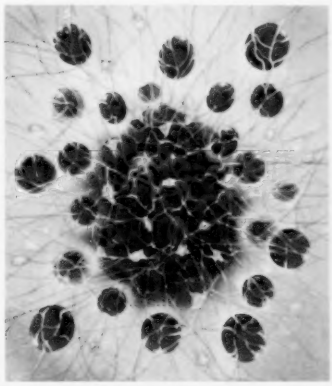

ON THE COVER
Image shows a macroscopic view of a blood clot. Two articles in this issue address the in vivo regulation of pathological clot (thrombus) formation. Photo provided by Jim Dowdalls, Photo Researchers, Inc. See related articles by Chauhan et al. (page 767) and Kleinschnitz et al. (page 513), and commentary (page 493).

ARTICLES

519 **Oral tolerance originates in the intestinal immune system and relies on antigen carriage by dendritic cells**
Tim Worbs, Ulrike Bode, Sheng Yan, Matthias W. Hoffmann, Gabriele Hintzen, Günter Bernhardt, Reinhold Förster, and Oliver Pabst
See commentary on page 497

529 **Constraints on HIV-1 evolution and immunodominance revealed in monozygotic adult twins infected with the same virus**
Rika Draenert, Todd M. Allen, Yang Liu, Terri Wrin, Colombe Chappey, Cori L. Verrill, Guillem Sirera, Robert L. Eldridge, Matthew P. Lahaie, Lidia Ruiz, Bonaventura Clotet, Christos J. Petropoulos, Bruce D. Walker, and Javier Martinez-Picado
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541 **The primary defect in experimental ileitis originates from a nonhematopoietic source**
Timothy S. Olson, Brian K. Reuter, Kevin G-E. Scott, Margaret A. Morris, Xiao-Ming Wang, Leslie N. Hancock, Tracy L. Burcin, Steven M. Cohn, Peter B. Ernst, Fabio Cominelli, Jonathan B. Meddings, Klaus Ley, and Theresa T. Pizarro

553 **TLR9/MyD88 signaling is required for class switching to pathogenic IgG2a and 2b autoantibodies in SLE**
Marc Ehlers, Hidehiro Fukuyama, Tracy L. McGaha, Alan Aderem, and Jeffrey V. Ravetch

563 **Cortistatin, a new antiinflammatory peptide with therapeutic effect on lethal endotoxemia**
Elena Gonzalez-Rey, Alejo Chorny, Gema Robledo, and Mario Delgado
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573 **IL-7 promotes T cell proliferation through destabilization of $p27^{Kip1}$**
Wen Qing Li, Qiong Jiang, Eiman Aleem, Philipp Kaldis, Annette R. Khaled, and Scott K. Durum
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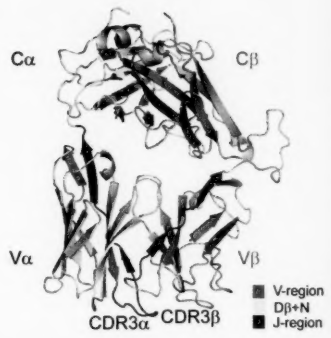
583 **Immature monocytes acquire antigens from other cells in the bone marrow and present them to T cells after maturing in the periphery**
Frank Tacke, Florent Ginhoux, Claudia Jakubzick, Nico van Rooijen, Miriam Merad, and Gwendalyn J. Randolph

599 **Antigen targeting to dendritic cells elicits long-lived T cell help for antibody responses**
Silvia B. Boscardin, Julius C.R. Hafalla, Revati F. Masilamani, Alice O. Kamphorst, Henry A. Zebroski, Urvashi Rai, Alexandre Morrot, Fidel Zavala, Ralph M. Steinman, Ruth S. Nussenzweig, and Michel C. Nussenzweig



Structure of the T cell receptor of natural killer T (NKT) cells.
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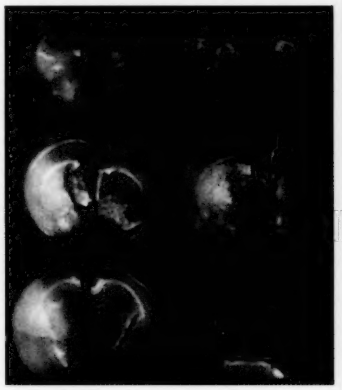

Brain injury (white) is reduced in mice lacking the clotting protein factor XII (FXII).
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607 **Intensified and protective CD4⁺ T cell immunity in mice with anti–dendritic cell HIV gag fusion antibody vaccine**
Christine Trumpfheller, Jennifer S. Finke, Carolina B. López, Thomas M. Moran, Bruno Moltedo, Helena Soares, Yaoxing Huang, Sarah J. Schlesinger, Chae Gyu Park, Michel C. Nussenzweig, Angela Granelli-Piperno, and Ralph M. Steinman

619 **Natural killer cell behavior in lymph nodes revealed by static and real-time imaging**
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633 **Roles for HLA and KIR polymorphisms in natural killer cell repertoire selection and modulation of effector function**
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647 **In vivo role of ER-associated peptidase activity in tailoring peptides for presentation by MHC class Ia and class Ib molecules**
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661 **A structural basis for selection and cross-species reactivity of the semi-invariant NKT cell receptor in CD1d/glycolipid recognition**
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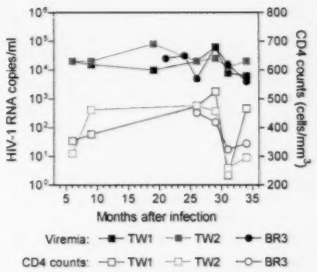
675 **Lineage specification and plasticity in CD19⁻ early B cell precursors**
Lynn L. Rumfelt, Yan Zhou, Benjamin M. Rowley, Susan A. Shinton, and Richard R. Hardy

689 **The polymerase complex genes contribute to the high virulence of the human H5N1 influenza virus isolate A/Vietnam/1203/04**
Rachelle Salomon, John Franks, Elena A. Govorkova, Natalia A. Ilyushina, Hui-Ling Yen, Diane J. Hulse-Post, Jennifer Humberd, Michel Trichet, Jerold E. Rehg, Richard J. Webby, Robert G. Webster, and Erich Hoffmann

699 **Structure and binding kinetics of three different human CD1d–α-galactosylceramide–specific T cell receptors**
Stephan D. Gadola, Michael Koch, Jon Marles-Wright, Nikolai M. Lissin, Dawn Shepherd, Gediminas Matulis, Karl Harlos, Peter M. Villiger, David I. Stuart, Bent K. Jakobsen, Vincenzo Cerundolo, and E. Yvonne Jones

VEGF-A induces tumor growth by inducing the expression of the orphan nuclear receptor Nur77. In the absence of Nur77, tumor growth is inhibited.
See page 719



HIV viremia and CD4⁺ T cell counts were similar in monozygotic twins (TW1 and TW2) infected with the same virus.
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711 **A polymorphism in the *EAAT2* promoter is associated with higher glutamate concentrations and higher frequency of progressing stroke**
Judith Mallolas, Olivia Hurtado, Mar Castellanos, Miguel Blanco, Tomás Sobrino, Joaquín Serena, José Vivancos, José Castillo, Ignacio Lizasoain, María A Moro, and Antoni Dávalos
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719 **Orphan nuclear receptor TR3/Nur77 regulates VEGF-A–induced angiogenesis through its transcriptional activity**
Huiyan Zeng, Liuliang Qin, Dezheng Zhao, Xiaolian Tan, Eleanor J. Manseau, Mien Van Hoang, Donald R. Senger, Lawrence F. Brown, Janice A. Nagy, and Harold F. Dvorak

731 **Loss of the proapoptotic protein, Bim, breaks B cell anergy**
Paula M. Oliver, Tibor Vass, John Kappler, and Philippa Marrack

743 **Antibody isotype-specific engagement of Fcγ receptors regulates B lymphocyte depletion during CD20 immunotherapy**
Yasuhito Hamaguchi, Yan Xiu, Kazuhiro Komura, Falk Nimmerjahn, and Thomas F. Tedder

755 **T-bet regulates Th1 responses through essential effects on GATA-3 function rather than on *IFNG* gene acetylation and transcription**
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767 **Systemic antithrombotic effects of ADAMTS13**
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777 **Infected site-restricted Foxp3$^+$ natural regulatory T cells are specific for microbial antigens**
Isabelle J. Suffia, Stacie K. Reckling, Ciriaco A. Piccirillo, Romina S. Goldszmid, and Yasmine Belkaid
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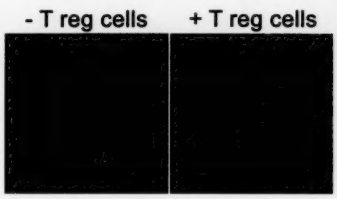
789 **Pathology and protection in nephrotoxic nephritis is determined by selective engagement of specific Fc receptors**
Yoshikatsu Kaneko, Falk Nimmerjahn, Michael P. Madaio, and Jeffrey V. Ravetch



The presence of CD25$^+$ regulatory T cells reduces the contact time between effector CD4$^+$ T cells and peptide-pulsed DCs (colors show tracks of effector T cells).
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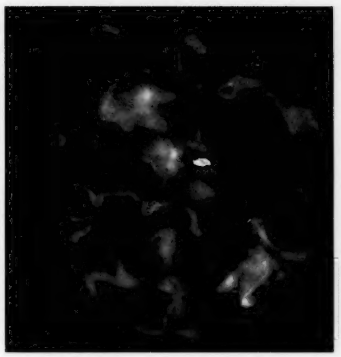

Severity of renal disease caused by the deposition of pathogenic immune complexes (red) in the kidney is determined by selective binding to Fc receptors.
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829 A unique requirement for the leukotriene B_4 receptor BLT1 for neutrophil recruitment in inflammatory arthritis
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837 Neutrophil-derived leukotriene B_4 is required for inflammatory arthritis
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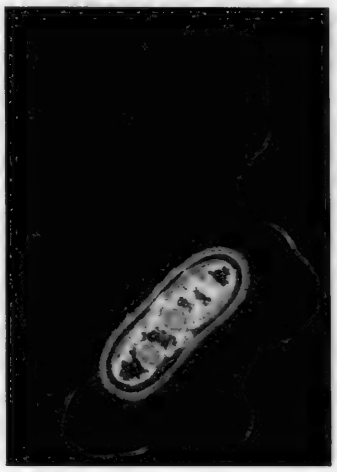

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Image shows a *Legionella pneumophila* bacterium. *L. pneumophila* flagellin is recognized by the intracellular pathogen recognition receptor Naip5. Related article by Molofsky et al.
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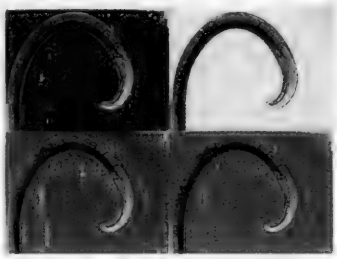

Interleukin-25 is required to generate a T helper 2 cytokine response to the intestinal helminth *Trichuris muris* (shown).
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871 **B7-H4 expression identifies a novel suppressive macrophage population in human ovarian carcinoma**
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919 **Secondary memory $CD8^+$ T cells are more protective but slower to acquire a central–memory phenotype**
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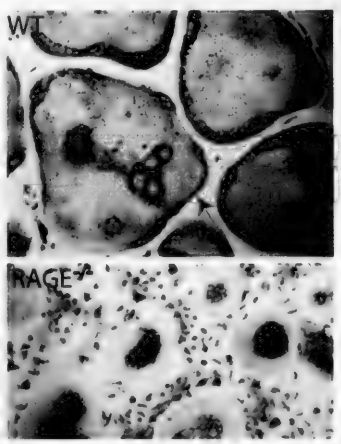

Formation of multinucleated osteoclasts (top) is impaired in the absence of the receptor for advanced glycation end products (RAGE, bottom).
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1007 **Dystroglycan is selectively cleaved at the parenchymal basement membrane at sites of leukocyte extravasation in experimental autoimmune encephalomyelitis**
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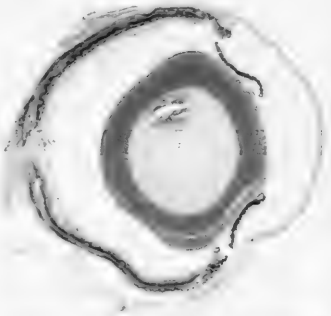

Endogenous expression of the retinal antigen IRBP is dispensable for the development of regulatory T cells that protect against IRBP-induced uveitis.
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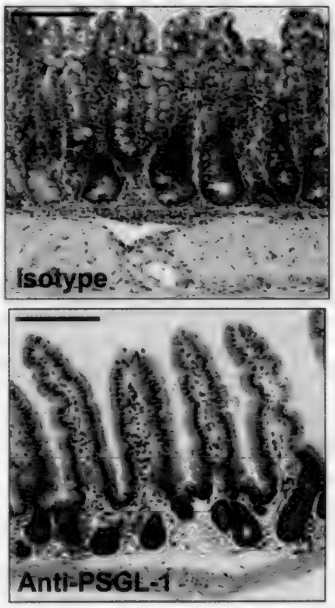

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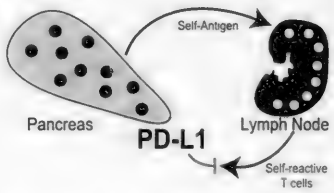
1129 **Correction**

1131 **Correction**



Expression of the inhibitory receptor PD-L1 on pancreatic islet cells protects against CD4$^+$ T cell–mediated destruction of transplanted islet cells.
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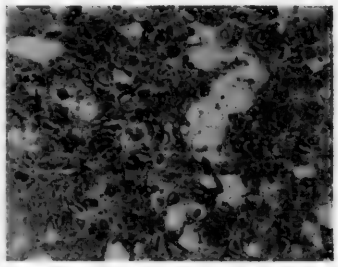

Prostaglandin E2 induces tumor cell expression of the proangiogenic chemokine CXCL1 (brown), thus promoting tumor growth.
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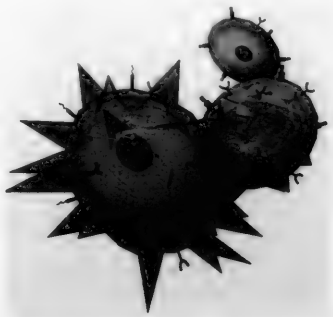

ON THE COVER
Cover design by State-of-the-art (email: philtag@sota-gfx.com). Image represents the reprogramming of ctyotoxic T cells into natural killer-like cells in patients with celiac disease. Related article by Meresse et al.
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1185 **A critical role for the host mediator macrophage migration inhibitory factor in the pathogenesis of malarial anemia**
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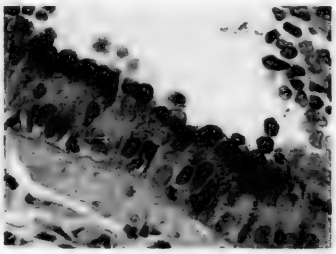

Depletion of plasmacytoid dendritic cells enhances mucus production (purple) in the lungs after infection with respiratory syncytial virus.
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Human mesenchymal stem cells inhibit tumor growth (bottom) in a mouse model of Kaposi's sarcoma.
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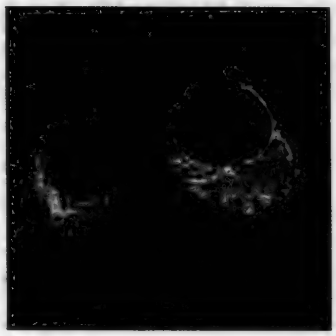
1383 **Correction**



Radiation enhances the expression of MHC class I (red) on tumor cells and enhances killing of the cells by CD8$^+$ T cells.
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Fas-expressing T cells are required to resolve eosinophilia and mucus production (dark purple) in inflamed airways.
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Live and hungry *Ixodes scapularis* tick. Laser scanning confocal fluorescent microscopy image provided by R.R. Montgomery and S. Narasimhan. Related article by Sukumaran et al.
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Worm infections trigger the production of Th2 cytokines by distinct cell types.
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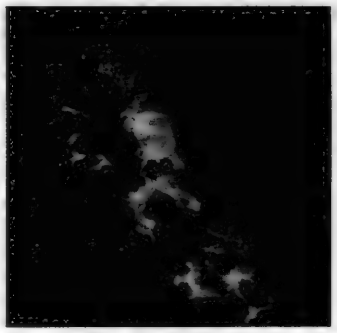

A new lymphocyte-sticking sialomucin is found on HEVs.
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1533 **Vaccination preserves CD4 memory T cells during acute simian immunodeficiency virus challenge**
Joseph J. Mattapallil, Daniel C. Douek, Alicia Buckler-White, David Montefiori, Norman L. Letvin, Gary J. Nabel, and Mario Roederer

1543 **The Eδ enhancer controls the generation of $CD4^-CD8^-$ αβTCR-expressing T cells that can give rise to different lineages of αβ T cells**
Iannis Aifantis, Craig H. Bassing, Annette I. Garbe, Katie Sawai, Frederick W. Alt, and Harald von Boehmer

1551 **SAP regulates T cell–mediated help for humoral immunity by a mechanism distinct from cytokine regulation**
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1567 **Forced usage of positively charged amino acids in immunoglobulin CDR-H3 impairs B cell development and antibody production**
Gregory C. Ippolito, Robert L. Schelonka, Michael Zemlin, Ivaylo I. Ivanov, Ryoki Kobayashi, Cosima Zemlin, G. Larry Gartland, Lars Nitschke, Jukka Pelkonen, Kohtaro Fujihashi, Klaus Rajewsky, and Harry W. Schroeder Jr.

1579 **Differential synergy of Notch and T cell receptor signaling determines αβ versus γδ lineage fate**
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1591 ***Yersinia pseudotuberculosis* disseminates directly from a replicating bacterial pool in the intestine**
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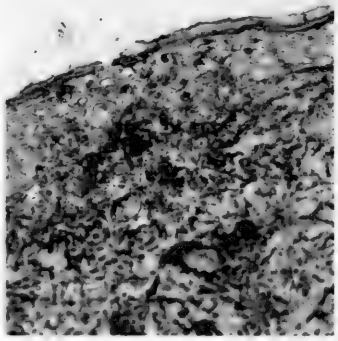
1603 **Nepmucin, a novel HEV sialomucin, mediates L-selectin–dependent lymphocyte rolling and promotes lymphocyte adhesion under flow**
Eiji Umemoto, Toshiyuki Tanaka, Hidenobu Kanda, Soojung Jin, Kazuo Tohya, Kazuhiro Otani, Takahiro Matsutani, Masanori Matsumoto, Yukihiko Ebisuno, Myoung Ho Jang, Minoru Fukuda, Takako Hirata, and Masayuki Miyasaka

1615 **Correction**

1617 **Correction**



The inhibitory receptor LAIR-1 binds to collagen in skin.
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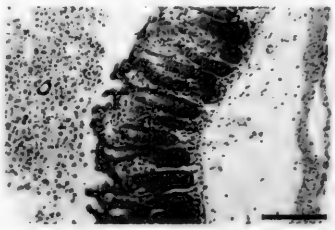

Gut inflammation caused by *Salmonella typhimurium* does not require the inflammasome.
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Melanomas disable DCs
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1629 Plasmacytoid dendritic cells of melanoma patients present exogenous proteins to $CD4^+$ T cells after FcγRII-mediated uptake
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1637 Role of HMGB1 in apoptosis-mediated sepsis lethality
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1643 The clone size of peripheral CD8 T cells is regulated by TCR promiscuity
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1651 The BRAF–MAPK signaling pathway is essential for cancer-immune evasion in human melanoma cells
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1657 FOXO3a-dependent regulation of Puma in response to cytokine/growth factor withdrawal
Han You, Marc Pellegrini, Katsuya Tsuchihara, Kazuo Yamamoto, Georg Hacker, Miriam Erlacher, Andreas Villunger, and Tak W. Mak

ON THE COVER
Cover image by graphic artist Stacey Posnett (stacey@posnett.net). Image shows the vagus nerve delivering antiinflammatory signals to the spleen. Related article by Huston et al.
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1665 **Regulation of the energy sensor AMP-activated protein kinase by antigen receptor and Ca^{2+} in T lymphocytes**
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1671 **ESAM supports neutrophil extravasation, activation of Rho, and VEGF-induced vascular permeability**
Frank Wegmann, Björn Petri, Alexander Georg Khandoga, Christian Moser, Andrej Khandoga, Stefan Volkery, Hang Li, Ines Nasdala, Oliver Brandau, Reinhard Fässler, Stefan Butz, Fritz Krombach, and Dietmar Vestweber

1679 **An autosomal dominant major gene confers predisposition to pulmonary tuberculosis in adults**
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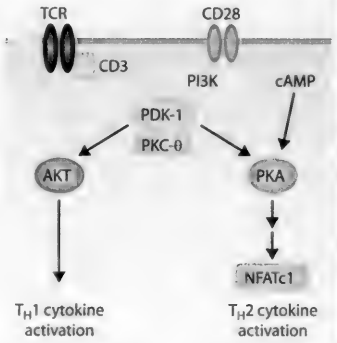
1685 **A crucial role for interleukin (IL)-1 in the induction of IL-17–producing T cells that mediate autoimmune encephalomyelitis**
Caroline Sutton, Corinna Brereton, Brian Keogh, Kingston H.G. Mills, and Ed C. Lavelle

1693 **Expression of interleukin (IL)-2 and IL-7 receptors discriminates between human regulatory and activated T cells**
Nabila Seddiki, Brigitte Santner-Nanan, Jeff Martinson, John Zaunders, Sarah Sasson, Alan Landay, Michael Solomon, Warwick Selby, Stephen I. Alexander, Ralph Nanan, Anthony Kelleher, and Barbara Fazekas de St. Groth



The kinases PDK-1 and PKA get together to turn on Th2 cytokines.
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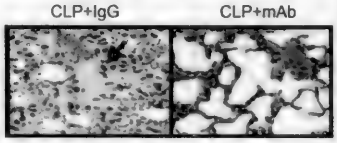

Antibodies against high mobility group box-1 protein (mAb) protect against organ damage during sepsis without decreasing apoptosis.
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1701 **CD127 expression inversely correlates with FoxP3 and suppressive function of human $CD4^+$ T reg cells**
Weihong Liu, Amy L. Putnam, Zhou Xu-yu, Gregory L. Szot, Michael R. Lee, Shirley Zhu, Peter A. Gottlieb, Philipp Kapranov, Thomas R. Gingeras, Barbara Fazekas de St. Groth, Carol Clayberger, David M. Soper, Steven F. Ziegler, and Jeffrey A. Bluestone

1713 **Massive and destructive T cell response to homeostatic cue in CD24-deficient lymphopenic hosts**
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1721 **Critical roles of the immunoglobulin intronic enhancers in maintaining the sequential rearrangement of *IgH* and *Igk* loci**
Matthew A. Inlay, Tongxiang Lin, Heather H. Gao, and Yang Xu

1733 **Phosphoinositide-dependent kinase 1 targets protein kinase A in a pathway that regulates interleukin 4**
Ajay Nirula, Mary Ho, Hyewon Phee, Jeroen Roose, and Arthur Weiss

1745 **X-linked susceptibility to mycobacteria is caused by mutations in NEMO impairing CD40-dependent IL-12 production**
Orchidée Filipe-Santos, Jacinta Bustamante, Margje H. Haverkamp, Emilie Vinolo, Cheng-Lung Ku, Anne Puel, David M. Frucht, Karin Christel, Horst von Bernuth, Emmanuelle Jouanguy, Jacqueline Feinberg, Anne Durandy, Brigitte Senechal, Ariane Chapgier, Guillaume Vogt, Ludovic de Beaucoudrey, Claire Fieschi, Capucine Picard, Meriem Garfa, Jalel Chemli, Mohamed Bejaoui, Maria N. Tsolia, Necil Kutukculer, Alessandro Plebani, Luigi Notarangelo, Christine Bodemer, Frédéric Geissmann, Alain Israël, Michel Véron, Maike Knackstedt, Ridha Barbouche, Laurent Abel, Klaus Magdorf, Dominique Gendrel, Fabrice Agou, Steven M. Holland, and Jean-Laurent Casanova
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1761 **Light chain editing generates polyreactive antibodies in chronic graft-versus-host reaction**
Esther J. Witsch, Hong Cao, Hidehiro Fukuyama, and Martin Weigert

1773 **Essential role of membrane cholesterol in accelerated BCR internalization and uncoupling from NF-κB in B cell clonal anergy**
Mathieu Bléry, Lina Tze, Lisa A. Miosge, Jesse E. Jun, and Christopher C. Goodnow

1785 **Igβ tyrosine residues contribute to the control of B cell receptor signaling by regulating receptor internalization**
Anna Gazumyan, Amy Reichlin, and Michel C. Nussenzweig

1795 **Essential role of IPS-1 in innate immune responses against RNA viruses**
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1805 **Interleukin 12p40 is required for dendritic cell migration and T cell priming after *Mycobacterium tuberculosis* infection**
Shabaana A. Khader, Santiago Partida-Sanchez, Guy Bell, Dawn M. Jelley-Gibbs, Susan Swain, John E. Pearl, Nico Ghilardi, Frederic J. deSauvage, Frances E. Lund, and Andrea M. Cooper
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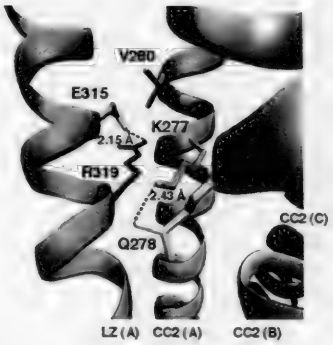
1817 **A major histocompatibility complex class I–dependent subset of memory phenotype CD8$^+$ cells**
Onur Boyman, Jae-Ho Cho, Joyce T. Tan, Charles D. Surh, and Jonathan Sprent

1827 **Correction**

1829 **Correction**

1831 **Correction**



Point mutations in the leucine zipper domain of NEMO impair interleukin-12 production in response to CD40 ligation.
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Anergic cells (right) sequester B cell receptors (red) in their cytoplasm in a cholesterol-dependent manner.
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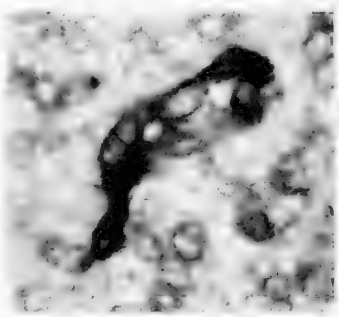

ON THE COVER
Image shows the proliferation of endothelial cells (blue) in lymph nodes. This process, which requires dendritic cells, helps explain how lymph nodes enlarge during an immune response. Related article by Webster et al.
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1833 A fond farewell
The Editors, *The Journal of Experimental Medicine*

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Bound for the brain
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Don't overreact
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1837 Antiviral defense: interferons and beyond
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1843 The herpesviral Fc receptor fcr-1 down-regulates the NKG2D ligands MULT-1 and H60
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1851 NK cells promote transplant tolerance by killing donor antigen-presenting cells
Guang Yu, Xuemin Xu, Minh Diem Vu, Elizabeth D. Kilpatrick, and Xian Chang Li
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1859 Enhancement of clonogenicity of human multiple myeloma by dendritic cells
Anjli Kukreja, Aisha Hutchinson, Kavita Dhodapkar, Amitabha Mazumder, David Vesole, Revathi Angitapalli, Sundar Jagannath, and Madhav V. Dhodapkar

1867 Asymmetrical lymphoid and myeloid lineage commitment in multipotent hematopoietic progenitors
Anne Y. Lai and Motonari Kondo

1875 Protection from lethal septic peritonitis by neutralizing the biological function of interleukin 27
Stefan Wirtz, Ingrid Tubbe, Peter R. Galle, Hans J. Schild, Mark Birkenbach, Richard S. Blumberg, and Markus F. Neurath
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1883 **Antiinflammatory effects of dexamethasone are partly dependent on induction of dual specificity phosphatase 1**
Sonya M. Abraham, Toby Lawrence, Anna Kleiman, Paul Warden, Mino Medghalchi, Jan Tuckermann, Jeremy Saklatvala, and Andrew R. Clark

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1891 **Twist mediates suppression of inflammation by type I IFNs and Axl**
M. Nusrat Sharif, Dražen Šošić, Carla V. Rothlin, Erin Kelly, Greg Lemke, Eric N. Olson, and Lionel B. Ivashkiv

1903 **Regulation of lymph node vascular growth by dendritic cells**
Brian Webster, Eric H. Ekland, Lucila M. Agle, Susan Chyou, Regina Ruggieri, and Theresa T. Lu
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1915 **The phosphoinositide-binding protein p40^{phox} activates the NADPH oxidase during FcγIIA receptor–induced phagocytosis**
Chang-Il Suh, Natalie D. Stull, Xing Jun Li, Wei Tian, Marianne O. Price, Sergio Grinstein, Michael B. Yaffe, Simon Atkinson, and Mary C. Dinauer

1927 **Neutrophils from p40$^{phox-/-}$ mice exhibit severe defects in NADPH oxidase regulation and oxidant-dependent bacterial killing**
Chris D. Ellson, Keith Davidson, G. John Ferguson, Rod O'Connor, Len R. Stephens, and Phillip T. Hawkins

1939 **Cerebral microcirculation shear stress levels determine *Neisseria meningitidis* attachment sites along the blood–brain barrier**
Emilie Mairey, Auguste Genovesio, Emmanuel Donnadieu, Christine Bernard, Francis Jaubert, Elisabeth Pinard, Jacques Seylaz, Jean-Christophe Olivo-Marin, Xavier Nassif, and Guillaume Duménil
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1951 **Oxidative stress generated by hemorrhagic shock recruits Toll-like receptor 4 to the plasma membrane in macrophages**
Kinga A. Powers, Katalin Szászi, Rachel G. Khadaroo, Patrick S. Tawadros, John C. Marshall, András Kapus, and Ori D. Rotstein

1963 **Adoptive immunotherapy induces CNS dendritic cell recruitment and antigen presentation during clearance of a persistent viral infection**
Henning Lauterbach, Elina I. Zuniga, Phi Truong, Michael B.A. Oldstone, and Dorian B. McGavern

Dendritic cells are required for virus-specific T cells (green) to clear chronic brain infection after adoptive immunotherapy.
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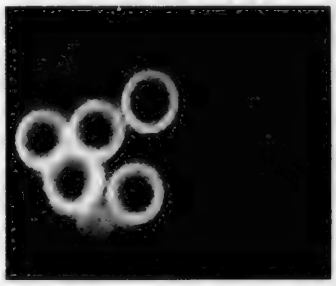

p40^{phox} (green) localizes to phagosome membranes (red) and couples FcγR-mediated phagocytosis to NADPH oxidase activation.
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1977 **Phenotypic plasticity of T cell progenitors upon exposure to Notch ligands**
Andreas Krueger, Annette I. Garbe, and Harald von Boehmer

1985 **Autoreactive marginal zone B cells are spontaneously activated but lymph node B cells require T cell help**
Laura Mandik-Nayak, Jennifer Racz, Barry P. Sleckman, and Paul M. Allen

1999 **Properties regulating the nature of the plasmacytoid dendritic cell response to Toll-like receptor 9 activation**
Cristiana Guiducci, Gary Ott, Jean H. Chan, Emily Damon, Carlo Calacsan, Tracy Matray, Kyung-Dall Lee, Robert L. Coffman, and Franck J. Barrat
See news item on page 1834

2009 **T-bet negatively regulates autoimmune myocarditis by suppressing local production of interleukin 17**
Manu Rangachari, Nora Mauermann, René R. Marty, Stephan Dirnhofer, Michael O. Kurrer, Vukoslav Komnenovic, Josef M. Penninger, and Urs Eriksson

2021 **An inflammatory checkpoint regulates recruitment of graft-versus-host reactive T cells to peripheral tissues**
Ronjon Chakraverty, Daniel Côté, Jennifer Buchli, Pete Cotter, Richard Hsu, Guiling Zhao, Teviah Sachs, Costas M. Pitsillides, Roderick Bronson, Terry Means, Charles Lin, and Megan Sykes

2033 **Nonneutralizing antibodies binding to the surface glycoprotein of lymphocytic choriomeningitis virus reduce early virus spread**
Lars Hangartner, Raphaël M. Zellweger, Mattia Giobbi, Jacqueline Weber, Bruno Eschli, Kathy D. McCoy, Nicola Harris, Mike Recher, Rolf M. Zinkernagel, and Hans Hengartner

Dendritic cell–tumor cell interaction enhances tumor cell clonogenicity and BCL6 (green) expression.
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Arthritis-inducing autoantibodies are found in both the splenic marginal zone (red) and among the recirculating follicular B cell pool.
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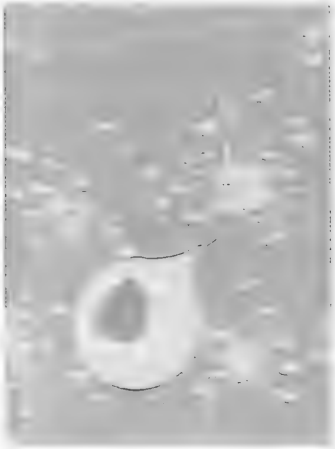

ON THE COVER
Artwork (cut Coloraid paper on paper) by New York artist Rachel Urkowitz (email: rachelurk@earthlink.net). Image shows an in vivo immunological synapse formed between a cytotoxic T cell and a virus-infected brain cell. Related article by Barcia et al.
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2043 Unpleasant surprises: how the Introduction has wandered into the Discussion
William A. Wells

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2044 Tough antigens trigger immunity
Desperately seeking synapses
Complement complicates pregnancies
Can DCs forecast atherosclerosis?
Sympathy for t-PA
Heather L. Van Epps

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2047 Escape from fatal fusion
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2049 Enhancing immunogenicity by limiting susceptibility to lysosomal proteolysis
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2057 The nuclear receptor LRH-1 critically regulates extra-adrenal glucocorticoid synthesis in the intestine
Matthias Mueller, Igor Cima, Mario Noti, Andrea Fuhrer, Sabine Jakob, Laurent Dubuquoy, Kristina Schoonjans, and Thomas Brunner

2063 Vacuolar and plasma membrane stripping and autophagic elimination of *Toxoplasma gondii* in primed effector macrophages
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2073 Low-grade chronic inflammation in regions of the normal mouse arterial intima predisposed to atherosclerosis
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2085 The in vivo pattern of AID targeting to immunoglobulin switch regions deduced from mutation spectra in *msh2*$^{-/-}$ *ung*$^{-/-}$ mice
Kanmin Xue, Cristina Rada, and Michael S. Neuberger

2095 **In vivo mature immunological synapses forming SMACs mediate clearance of virally infected astrocytes from the brain**
Carlos Barcia, Clare E. Thomas, James F. Curtin, Gwendalyn D. King, Kolja Wawrowsky, Marianela Candolfi, Wei-Dong Xiong, Chunyan Liu, Kurt Kroeger, Olivier Boyer, Jerzy Kupiec-Weglinski, David Klatzmann, Maria G. Castro, and Pedro R. Lowenstein
See news item on page 2044

2109 **Carbon monoxide reverses established pulmonary hypertension**
Brian S. Zuckerbraun, Beek Yoke Chin, Barbara Wegiel, Timothy R. Billiar, Eva Czsimadia, Jayashree Rao, Larissa Shimoda, Emeka Ifedigbo, Shin Kanno, and Leo E. Otterbein

2121 **A dose-dependent requirement for the proline motif of CD28 in cellular and humoral immunity revealed by a targeted knockin mutant**
Lindzy D. Friend, Dulari D. Shah, Christine Deppong, Joseph Lin, Traci L. Bricker, Twyla I. Juehne, Christine M. Rose, and Jonathan M. Green

2135 **Duration of the initial TCR stimulus controls the magnitude but not functionality of the $CD8^+$ T cell response**
Martin Prlic, Gabriela Hernandez-Hoyos, and Michael J. Bevan

2145 **Elimination of chronic viral infection by blocking CD27 signaling**
Matthias Matter, Bernhard Odermatt, Hideo Yagita, Jean-Marc Nuoffer, and Adrian F. Ochsenbein

2157 **Selective dysregulation of the FcγIIB receptor on memory B cells in SLE**
Meggan Mackay, Anfisa Stanevsky, Tao Wang, Cynthia Aranow, Margaret Li, Scott Koenig, Jeffrey V. Ravetch, and Betty Diamond

2165 **Complement activation induces dysregulation of angiogenic factors and causes fetal rejection and growth restriction**
Guillermina Girardi, Dmitry Yarilin, Joshua M. Thurman, V. Michael Holers, and Jane E. Salmon
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2177 **NF-κB translocation prevents host cell death after low-dose challenge by *Legionella pneumophila***
Vicki P. Losick and Ralph R. Isberg

2191 **The plasminogen activator system modulates sympathetic nerve function**
Ulrich Schaefer, Takuji Machida, Sandra Vorlova, Sidney Strickland, and Roberto Levi
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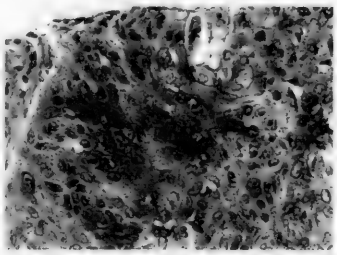

The chemokine SDF-1 binds to CXCR7 (red) on tumor cells and promotes cell survival and adhesion.
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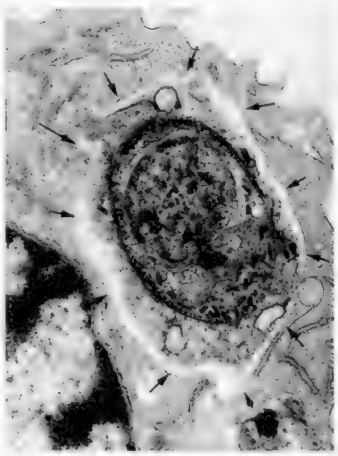

Stripping of the *Toxoplasma gondii* plasma membrane precedes uptake by autophagosomes and lysosomal degradation.
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2201 **A novel chemokine receptor for SDF-1 and I-TAC involved in cell survival, cell adhesion, and tumor development**
Jennifer M. Burns, Bretton C. Summers, Yu Wang, Anita Melikian, Rob Berahovich, Zhenhua Miao, Mark E. T. Penfold, Mary Jean Sunshine, Dan R. Littman, Calvin J. Kuo, Kevin Wei, Brian E. McMaster, Kim Wright, Maureen C. Howard, and Thomas J. Schall

2215 **Correction**

Carbon monoxide reverses established pulmonary hypertension by triggering apoptosis (yellow) of vascular smooth muscle cells.
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Defective fat storage
ES cells mend broken hearts
Beating *Leishmania*'s iron armor
Ruth Williams

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Osteoclasts on steroids
Marrow-less mice
Tackling TREM2
T cells egg on osteoclasts
Heather L. Van Epps

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2229 Chewing the fat on natural killer T cell development
Dale I. Godfrey, Malcolm J. McConville, and Daniel G. Pellicci

2233 Synergy between the pre–T cell receptor and Notch: cementing the αβ lineage choice
Cynthia J. Guidos

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2239 The requirement for Notch signaling at the β-selection checkpoint in vivo is absolute and independent of the pre–T cell receptor
Ivan Maillard, LiLi Tu, Arivazhagan Sambandam, Yumi Yashiro-Ohtani, John Millholland, Karen Keeshan, Olga Shestova, Lanwei Xu, Avinash Bhandoola, and Warren S. Pear

2247 Differential impact of *Ink4a* and *Arf* on hematopoietic stem cells and their bone marrow microenvironment in *Bmi1*-deficient mice
Hideyuki Oguro, Atsushi Iwama, Yohei Morita, Takehiko Kamijo, Maarten van Lohuizen, and Hiromitsu Nakauchi
See news item on page 2218

ON THE COVER
Image shows embryonic stem cell-derived cardiomyocytes (green) intergrated into an injured mouse heart, where they improve contractile function. Related article by Kolossov et al.
See page 2315

2255 **Persistent expression of autoantibodies in SLE patients in remission**
Sergey Yurasov, Thomas Tiller, Makoto Tsuiji, Klara Velinzon, Virginia Pascual, Hedda Wardemann, and Michel C. Nussenzweig
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2263 **Continuous recruitment of naive T cells contributes to heterogeneity of antiviral CD8 T cells during persistent infection**
Vaiva Vezys, David Masopust, Christopher C. Kemball, Daniel L. Barber, Leigh A. O'Mara, Christian P. Larsen, Thomas C. Pearson, Rafi Ahmed, and Aron E. Lukacher

2271 **Interleukin (IL)-22 and IL-17 are coexpressed by Th17 cells and cooperatively enhance expression of antimicrobial peptides**
Spencer C. Liang, Xiang-Yang Tan, Deborah P. Luxenberg, Riyez Karim, Kyriaki Dunussi-Joannopoulos, Mary Collins, and Lynette A. Fouser

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2281 **PD-1 is a regulator of virus-specific CD8$^+$ T cell survival in HIV infection**
Constantinos Petrovas, Joseph P. Casazza, Jason M. Brenchley, David A. Price, Emma Gostick, William C. Adams, Melissa L. Precopio, Timothy Schacker, Mario Roederer, Daniel C. Douek, and Richard A. Koup

2293 **Impaired selection of invariant natural killer T cells in diverse mouse models of glycosphingolipid lysosomal storage diseases**
Stephan D. Gadola, Jonathan D. Silk, Aruna Jeans, Petr A. Illarionov, Mariolina Salio, Gurdyal S. Besra, Raymond Dwek, Terry D. Butters, Frances M. Platt, and Vincenzo Cerundolo
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2305 **B-1 B lymphocytes require Blimp-1 for immunoglobulin secretion**
David Savitsky and Kathryn Calame

2315 **Engraftment of engineered ES cell–derived cardiomyocytes but not BM cells restores contractile function to the infarcted myocardium**
Eugen Kolossov, Toktam Bostani, Wilhelm Roell, Martin Breitbach, Frank Pillekamp, Jens M. Nygren, Philipp Sasse, Olga Rubenchik, Jochen W.U. Fries, Daniela Wenzel, Caroline Geisen, Ying Xia, Zhongju Lu, Yaqi Duan, Ralf Kettenhofen, Stefan Jovinge, Wilhelm Bloch, Heribert Bohlen, Armin Welz, Juergen Hescheler, Sten Eirik Jacobsen, Bernd K. Fleischmann
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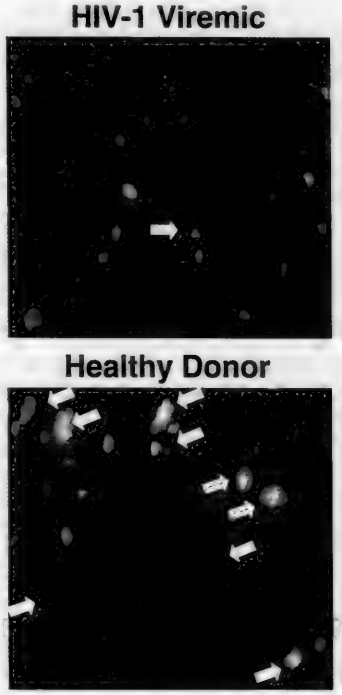
2329 **Essential roles of DC-derived IL-15 as a mediator of inflammatory responses in vivo**
Toshiaki Ohteki, Hiroyuki Tada, Kazuto Ishida, Taku Sato, Chikako Maki, Taketo Yamada, Junji Hamuro, and Shigeo Koyasu



NK cells (red) of viremic HIV patients are inefficient at lysing (arrows) undesirable immature dendritic cells (blue).
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Colocalization of PPARγ (red) and retinoid-regulated, tissue transglutaminase (green) in human lymph node cells.
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2339 **Characterization of the defective interaction between a subset of natural killer cells and dendritic cells in HIV-1 infection**
Domenico Mavilio, Gabriella Lombardo, Audrey Kinter, Manuela Fogli, Andrea La Sala, Saida Ortolano, Annahita Farschi, Dean Follmann, Roby Gregg, Colin Kovacs, Emanuela Marcenaro, Daniela Pende, Alessandro Moretta, and Anthony S. Fauci

2351 **PPARγ controls CD1d expression by turning on retinoic acid synthesis in developing human dendritic cells**
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2363 **A *Leishmania amazonensis* ZIP family iron transporter is essential for parasite replication within macrophage phagolysosomes**
Chau Huynh, David L. Sacks, and Norma W. Andrews
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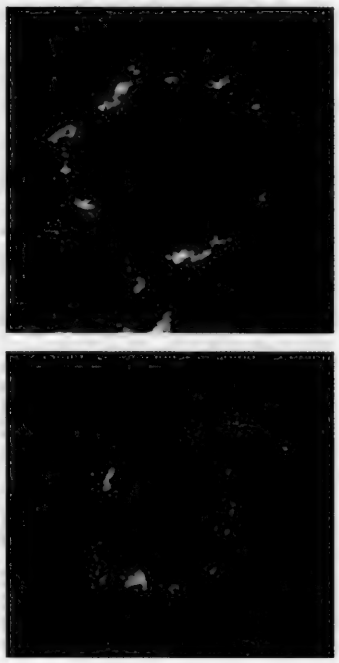
2377 **Carbon monoxide differentially inhibits TLR signaling pathways by regulating ROS-induced trafficking of TLRs to lipid rafts**
Kiichi Nakahira, Hong Pyo Kim, Xue Hui Geng, Atsunori Nakao, Xue Wang, Noriko Murase, Peter F. Drain, Xiaomei Wang, Madhu Sasidhar, Elizabeth G. Nabel, Toru Takahashi, Nicholas W. Lukacs, Stefan W. Ryter, Kiyoshi Morita, and Augustine M.K. Choi



Carbon monoxide treatment (bottom) stops Toll-like receptors (red) from boarding lipid rafts (green).
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2419 High affinity germinal center B cells are actively selected into the plasma cell compartment
Tri Giang Phan, Didrik Paus, Tyani D. Chan, Marian L. Turner, Stephen L. Nutt, Antony Basten, and Robert Brink

2425 Follicular lymphoma-like B cells in healthy individuals: a novel intermediate step in early lymphomagenesis
Sandrine Roulland, Jean-Marc Navarro, Pierre Grenot, Michèle Milili, Julie Agopian, Bertrand Montpellier, Pascal Gauduchon, Pierre Lebailly, Claudine Schiff, and Bertrand Nadel

ON THE COVER
Illustration of chronic myeloid leukemia. Between red blood cells are immature white blood cells (pink with white border), which proliferate uncontrollably in this disease. Related article by Middleton et al.
See page 2529

2433 **Signal-dependent splicing of tissue factor pre-mRNA modulates the thrombogenecity of human platelets**
Hansjörg Schwertz, Neal D. Tolley, Jason M. Foulks, Melvin M. Denis, Ben W. Risenmay, Michael Buerke, Rachel E. Tilley, Matthew T. Rondina, Estelle M. Harris, Larry W. Kraiss, Nigel Mackman, Guy A. Zimmerman, and Andrew S. Weyrich
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2441 **Triggering CD40 on endothelial cells contributes to tumor growth**
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2451 **CCR5-dependent homing of naturally occurring $CD4^+$ regulatory T cells to sites of *Leishmania major* infection favors pathogen persistence**
Ekaterina Yurchenko, Michael Tritt, Valerie Hay, Ethan M. Shevach, Yasmine Belkaid, and Ciriaco A. Piccirillo

2461 **Resolution of a chronic viral infection after interleukin-10 receptor blockade**
Mette Ejrnaes, Christophe M. Filippi, Marianne M. Martinic, Eleanor M. Ling, Lisa M. Togher, Shane Crotty, and Matthias G. von Herrath
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2473 **Interleukin-23 drives innate and T cell–mediated intestinal inflammation**
Sophie Hue, Philip Ahern, Sofia Buonocore, Marika C. Kullberg, Daniel J. Cua, Brent S. McKenzie, Fiona Powrie, and Kevin J. Maloy
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2485 **IL-23 plays a key role in *Helicobacter hepaticus*–induced T cell–dependent colitis**
Marika C. Kullberg, Dragana Jankovic, Carl G. Feng, Sophie Hue, Peter L. Gorelick, Brent S. McKenzie, Daniel J. Cua, Fiona Powrie, Allen W. Cheever, Kevin J. Maloy, and Alan Sher
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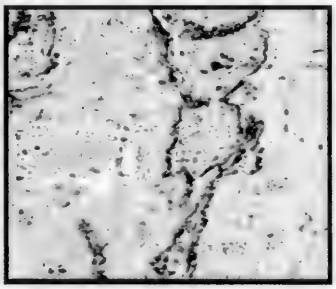
2495 **Integrin signaling is critical for pathological angiogenesis**
Ganapati H. Mahabeleshwar, Weiyi Feng, David R. Phillips, and Tatiana V. Byzova

2509 **T cell receptor for antigen induces linker for activation of T cell–dependent activation of a negative signaling complex involving Dok-2, SHIP-1, and Grb-2**
Shen Dong, Béatrice Corre, Eliane Foulon, Evelyne Dufour, André Veillette, Oreste Acuto, and Frédérique Michel



Mice with mutant integrin (bottom) make less new blood vessels (brown).
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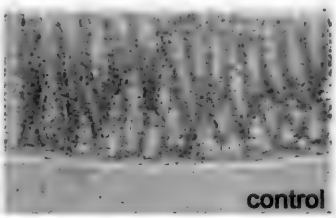

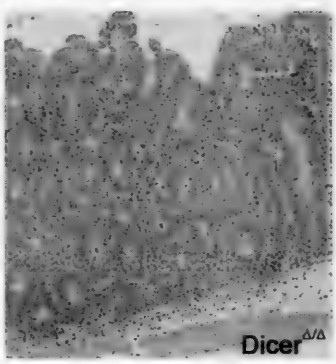

Dicer$^{\Delta/\Delta}$ mice have fewer regulatory T cells and suffer immune pathology, apparent in the gut (shown above) and elsewhere.
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2519 **A role for Dicer in immune regulation**
Bradley S. Cobb, Arnulf Hertweck, James Smith, Eric O'Connor, Daniel Graf, Terence Cook, Stephen T. Smale, Shimon Sakaguchi, Frederick J. Livesey, Amanda G. Fisher, and Matthias Merkenschlager

2529 **Identification of 12/15-lipoxygenase as a suppressor of myeloproliferative disease**
Melissa Kristine Middleton, Alicia Marie Zukas, Tanya Rubinstein, Michele Jacob, Peijuan Zhu, Liang Zhao, Ian Blair, and Ellen Puré
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2541 **Regulation of B1 cell migration by signals through Toll-like receptors**
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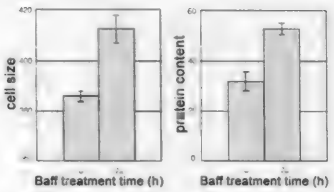
2551 **BAFF controls B cell metabolic fitness through a PKCβ- and Akt-dependent mechanism**
Alina Patke, Ingrid Mecklenbräuker, Hediye Erdjument-Bromage, Paul Tempst, and Alexander Tarakhovsky

2563 **Correction**



Baff promotes B cell fitness and survival, increasing their size (left) and protein content (right).
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2569 Intraluminal crawling of neutrophils to emigration sites: a molecularly distinct process from adhesion in the recruitment cascade
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2589 A role for IRF3-dependent RXRα repression in hepatotoxicity associated with viral infections
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2603 Pivotal roles of $CD8^+$ T cells restricted by MHC class I–like molecules in autoimmune diseases
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2613 Oxidized phosphatidylserine–CD36 interactions play an essential role in macrophage-dependent phagocytosis of apoptotic cells
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2627 Identification of a radio-resistant and cycling dermal dendritic cell population in mice and men
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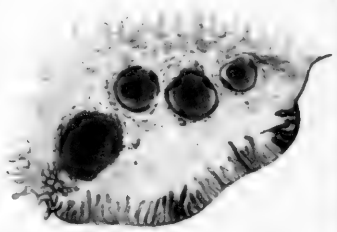

ON THE COVER
Painting by New York artist Emilie Clark (emilie@sharkbooks.com) showing an osteoclast cell. T helper 1 cells promote the bone destroying activity of osteoclasts during autoimmune arthritis. Related article by Sato et al.
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2639 **Adenosine A_{2A} receptor activation reduces hepatic ischemia reperfusion injury by inhibiting CD1d-dependent NKT cell activation**
Courtney M. Lappas, Yuan-Ji Day, Melissa A. Marshall, Victor H. Engelhard, and Joel Linden

2649 **Reversal of airway hyperresponsiveness by induction of airway mucosal $CD4^+CD25^+$ regulatory T cells**
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2661 **Induction of a virus-specific effector–memory $CD4^+$ T cell response by attenuated SIV infection**
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2673 **Th17 functions as an osteoclastogenic helper T cell subset that links T cell activation and bone destruction**
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2683 **Plasma cell $S1P_1$ expression determines secondary lymphoid organ retention versus bone marrow tropism**
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2691 **Phosphodiesterase-5 inhibition augments endogenous antitumor immunity by reducing myeloid-derived suppressor cell function**
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2703 **Junctional adhesion molecule-C regulates vascular endothelial permeability by modulating VE-cadherin–mediated cell–cell contacts**
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2715 **Interleukin-17 is a negative regulator of established allergic asthma**
Silvia Schnyder-Candrian, Dieudonnée Togbe, Isabelle Couillin, Isabelle Mercier, Frank Brombacher, Valérie Quesniaux, Francois Fossiez, Bernhard Ryffel, and Bruno Schnyder

Neutrophils (green) can adhere to and crawl along blood vessels (red) thanks to the β_2-integrins LFA-1 and Mac-1, respectively.
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Suspected causative agent of human psoriasis, IL-23, induces epidermal hyperplasia (right) in mice.
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2727 **Spontaneous autoimmunity prevented by thymic expression of a single self-antigen**
Jason DeVoss, Yafei Hou, Kellsey Johannes, Wen Lu, Gregory I. Liou, John Rinn, Howard Chang, Rachel Caspi, Lawrence Fong, and Mark S. Anderson
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2737 **Insulin-induced remission in new-onset NOD mice is maintained by the PD-1–PD-L1 pathway**
Brian T. Fife, Indira Guleria, Melanie Gubbels Bupp, Todd N. Eagar, Qizhi Tang, Helene Bour-Jordan, Hideo Yagita, Miyuki Azuma, Mohamed H. Sayegh, and Jeffrey A. Bluestone

2749 **Random migration precedes stable target cell interactions of tumor-infiltrating T cells**
Paulus Mrass, Hajime Takano, Lai Guan Ng, Sachin Daxini, Marcio O. Lasaro, Amaya Iparraguirre, Lois L. Cavanagh, Ulrich H. von Andrian, Hildegund C.J. Ertl, Philip G. Haydon, and Wolfgang Weninger

2763 **An inflammation-induced mechanism for leukocyte transmigration across lymphatic vessel endothelium**
Louise A. Johnson, Steven Clasper, Andrew P. Holt, Patricia F. Lalor, Dilair Baban, and David G. Jackson

2779 **Retraction**

The CD36-expressing macrophage, shown here, has engulfed vesicles (red) that mimic apoptotic cells. Without CD36, phagocytosis of apoptotic cells by macrophages is impaired.
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2793 **Regulation of ATM/p53-dependent suppression of myc-induced lymphomas by Wip1 phosphatase**
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2801 **The G534E polymorphism of the gene encoding the factor VII–activating protease is associated with cardiovascular risk due to increased neointima formation**
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2809 **Cardiotrophin-1 defends the liver against ischemia-reperfusion injury and mediates the protective effect of ischemic preconditioning**
Maria Iñiguez, Carmen Berasain, Eduardo Martinez-Ansó, Matilde Bustos, Puri Fortes, Diane Pennica, Matias A. Avila, and Jesús Prieto

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2817 **Vanin-1 licenses inflammatory mediator production by gut epithelial cells and controls colitis by antagonizing peroxisome proliferator-activated receptor γ activity**
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2829 **Deregulated Syk inhibits differentiation and induces growth factor–independent proliferation of pre–B cells**
Thomas Wossning, Sebastian Herzog, Fabian Köhler, Sonja Meixlsperger, Yogesh Kulathu, Gerhard Mittler, Akihiro Abe, Uta Fuchs, Arndt Borkhardt, and Hassan Jumaa
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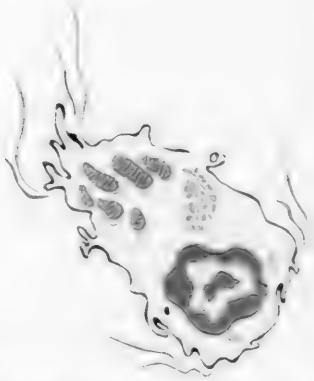

ON THE COVER
Artwork (cut Coloroid paper on paper) by New York artist Rachel Urkowitz (email: rachelurk@earthlink.net) representing the movement of mitochondria to the back of migrating cells. This mitochondrial relocation powers the push forward. Related article by Campello et al.
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2841 **Dynamic imaging of dendritic cell extension into the small bowel lumen in response to epithelial cell TLR engagement**
Marcello Chieppa, Maria Rescigno, Alex Y.C. Huang, and Ronald N. Germain
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2853 **A bacterial carbohydrate links innate and adaptive responses through Toll-like receptor 2**
Qun Wang, Rachel M. McLoughlin, Brian A. Cobb, Marie Charrel-Dennis, Kathleen J. Zaleski, Douglas Golenbock, Arthur O. Tzianabos, and Dennis L. Kasper

2865 **Acquisition of direct antiviral effector functions by CMV-specific CD4$^+$ T lymphocytes with cellular maturation**
Joseph P. Casazza, Michael R. Betts, David A. Price, Melissa L. Precopio, Laura E. Ruff, Jason M. Brenchley, Brenna J. Hill, Mario Roederer, Daniel C. Douek, and Richard A. Koup

2879 **Orchestration of lymphocyte chemotaxis by mitochondrial dynamics**
Silvia Campello, Rosa Ana Lacalle, Monica Bettella, Santos Mañes, Luca Scorrano, and Antonella Viola
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2887 **APOBEC3G/3F mediates intrinsic resistance of monocyte-derived dendritic cells to HIV-1 infection**
Marjorie Pion, Angela Granelli-Piperno, Bastien Mangeat, Romaine Stalder, Rafael Correa, Ralph M. Steinman, and Vincent Piguet

2895 **Caveolin-1: a critical regulator of lung fibrosis in idiopathic pulmonary fibrosis**
Xiao Mei Wang, Yingze Zhang, Hong Pyo Kim, Zhihong Zhou, Carol A. Feghali-Bostwick, Fang Liu, Emeka Ifedigbo, Xiaohui Xu, Tim D. Oury, Naftali Kaminski, and Augustine M.K. Choi

2907 **Neutrophil histamine contributes to inflammation in mycoplasma pneumonia**
Xiang Xu, Dongji Zhang, Hong Zhang, Paul J. Wolters, Nigel P. Killeen, Brandon M. Sullivan, Richard M. Locksley, Clifford A. Lowell, and George H. Caughey
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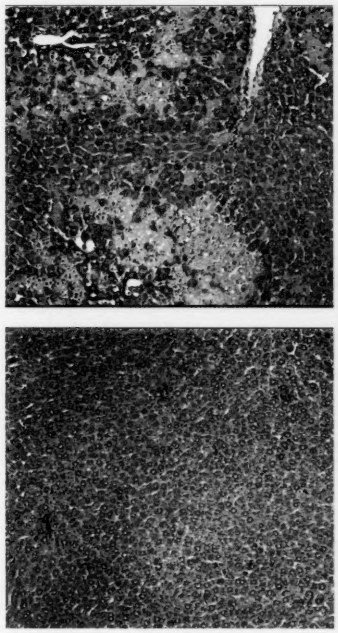
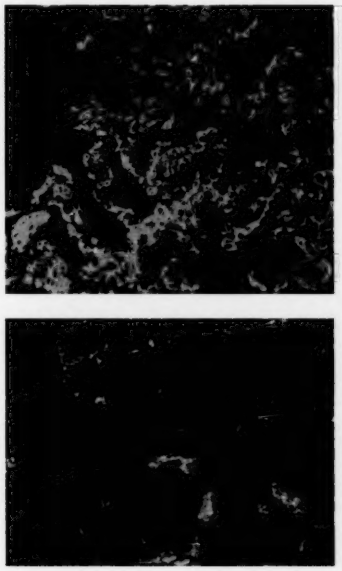
2919 **Control of gene conversion and somatic hypermutation by immunoglobulin promoter and enhancer sequences**
Shu Yuan Yang, Sebastian D. Fugmann, and David G. Schatz

2929 **IL-21–induced Bε cell apoptosis mediated by natural killer T cells suppresses IgE responses**
Michishige Harada, Kumiko Magara-Koyanagi, Hiroshi Watarai, Yuko Nagata, Yasuyuki Ishii, Satoshi Kojo, Shigetoshi Horiguchi, Yoshitaka Okamoto, Toshinori Nakayama, Nobutaka Suzuki, Wen-Chen Yeh, Shizuo Akira, Hiroshi Kitamura, Osamu Ohara, Ken-ichiro Seino, and Masaru Taniguchi



Ischemia-reperfusion injury (top) is prevented by prior cardiotrophin treatment (bottom).
See page 2809



Reduced expression of the fibrotic inhibitor, caveolin-1 (green), is thought to cause pulmonary fibrosis (bottom).
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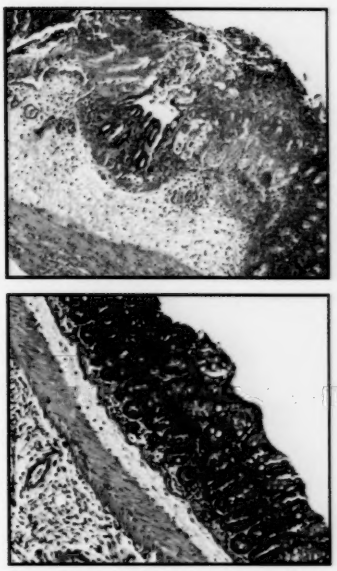
2939 **Puma cooperates with Bim, the rate-limiting BH3-only protein in cell death during lymphocyte development, in apoptosis induction**
Miriam Erlacher, Verena Labi, Claudia Manzl, Günther Böck, Alexandar Tzankov, Georg Häcker, Ewa Michalak, Andreas Strasser, and Andreas Villunger

2953 **Bcl-xl does not have to bind Bax to protect T cells from death**
Xinqi Liu, Yanan Zhu, Shaodong Dai, Janice White, Fred Peyerl, John W. Kappler, and Philippa Marrack

2963 **Correction**

2965 **Correction**



Tissue damage during colitis (top) is reduced in the absence of Vanin-1 (bottom).
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